

# STREAM POLLUTION IN LOUISIANA.

J. H. O'NEILL,  
*State Sanitary Engineer.*

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Louisiana has an area of 45,409 square miles and a population, according to the census of 1910, of 1,656,388. As the chief industries of Louisiana are agricultural, the population is scattered and the state has not yet been forced by intensity of population to consider seriously the problem of sewage purification.

There are only six cities in the state with a population over 10,000. All these are provided with sewerage systems. Five are situated on large rivers and, as there are no cities below using the river water for potable purposes, the sewage is discharged directly into the river without treatment.

Lake Charles, population 11,449, has recently installed a sewerage system which discharges through four outfalls into Lake Charles and Calcasieu River. As the flow of the river is at times rather sluggish, septic tanks are provided to remove the solid constituents of the sewage.

Of the cities of less than 10,000, only one, Opelousas, population 4,623, has a complete sewerage system. The sewage is treated in a plant consisting of a grit chamber, Imhoff tanks and percolating beds. The effluent is discharged into a small drainage canal. The plant has been in operation only a few months and as yet no data as to its efficiency are available.

One problem peculiar to the South, and more particularly to the southern part of Louisiana, is the pollution of small streams by the wastes from sugar refineries. The broad fertile alluvial plains of the southern part of the state are given largely to the raising of sugar cane. These plains are cut up by a network of shallow sluggish streams called bayous. These bayous serve as highways for much water traffic. Along their banks are located many sugar refineries and plantation colonies, the wastes from which are discharged into the bayous.

During 1910 and 1911 an investigation was made of Bayou Teche, one of the most important of these streams, by a committee headed by Dr. Beverly W. Smith, vice-president of the Louisiana State Board of Health, and composed of ten physicians, three parish health officers, three city health officers and two sanitarians—the chief of the state engineers, the United States army engineer in charge of the gulf district, three planters, and the state analyst. Out of this committee, a sub-committee consisting of two engineers, one planter, two physicians, and one chemist, was appointed. This sub-committee was appointed to oversee the general work done in the field and laboratory.

Three trips were made from the mouth of the Teche to Morbihan and a

final trip was made in 1911 as far as St. Martinsville. Field surveys and analyses were made; samples were collected and complete analyses were made in the laboratory.

The Teche is a long, narrow, winding stream with a sluggish current. During the grinding season it is practically stagnant. The average width of the watershed is about 2,000 feet and varies from very steep banks to very gradual slopes.

The sources of pollution are as follows:

1. *Wastes from the population along its banks.* There are ten towns on the bayou varying in population from 300 to 9,000, and many farms between these, making a total population of 27,000 whose discharge might get into the bayou. None of the towns has a general sewerage system, but all have a few private sewer lines. The open-back surface toilet is common in this section and rains wash much pollution from the closets into the bayou.

In addition there is also a considerable amount of pollution from vast numbers of mules, horses, pigs, sheep, dogs, poultry, etc., from the farms and stable-lots on the banks of the bayou.

2. *Sugar refinery wastes.* There are twenty large sugar refineries along the bayou, with a total capacity of one hundred million pounds per season. The bayou water is used for cooling the evaporating pans and, there being little current to carry it off, it goes back and forth from the mill to the stream in a constant circle until it has lost much of its oxygen by being heated, and so is deprived of its purifying powers.

The "sweet water," that is, the condensed vapors from the evaporating pans is also discharged into the bayou. It is estimated that about 3,000 pounds of sugar out of every million pounds manufactured are lost in the sweet waters through entrainment, sugar being only one of the decomposable substances carried over in this manner. Estimating the sugar production of the Teche proper at one hundred and fifty million pounds, we have four hundred and fifty thousand pounds of sugar polluting the Teche each season.

Sanitary surveys and analyses show that even at its best, namely during high water, the Teche is taxed to its capacity for caring for organic wastes from the first two sources at all times of the year.

Therefore, when the additional burden of the refinery wastes is put on the natural purification processes they prove to be utterly inadequate. The stream is almost wholly deprived of its dissolved oxygen, the fish are killed and the noxious odors of decomposition become almost unbearable in some sections.

The remedies proposed were:

*First*, to prevent pollution of the stream by all animal matter at all times of the year by proper sanitary observances.

To protect the stream from all possible sugar-house wastes and material containing organic matter.

*Second*, to turn into Bayou Teche, a large volume of fresh water, in order to maintain a constant current and prevent the sluggish condition of the stream.

Plans have been made by the United States and the state engineers for the joining of Bayou Courtableau to Bayou Teche, which would insure a constant current in the Teche, but the execution of these plans has been so far held up by the opposition of powerful irrigation interests.

Much good, however, has been accomplished by the general cleaning of the banks of the Teche and by the discharge of organic wastes over the crest of the ridges on both sides of the Teche.